Biplanes and Black Powder

Field Marshal Edwin Rommel said "Anyone who has to fight, even with the most modern weapons, against an enemy in complete command of the air, fights Like a savage against modern European troops, under the same handicaps and with the same chances of cuccess." But in airpower's early days, "savages" armed with black powder cartridges acquitted themselves quite well against European warplanes

by Wayne R. Austerman, Ph.D.

Viewers of the 1990 film *Air America* starring Mel Gibson must have been bemused by the opening scene of the story, which depicted a Viet Cong guerrilla shouldering an 1874-vintage French Gras rifle to fire a single 11-millimeter black powder round at an American C-119 transport as it flew overhead, only to cripple and bring down the huge aircraft when the slug struck an engine. It was at best a highly improbable scenario, but such arms did linger in service to the enemy during the Viet Nam Conflict, and while it was doubtful that one such archaic piece ever downed an American aircraft, the cinematic incident carried echoes of other times and other wars earlier in the century, when the restive denizens of the wilder quarters of one of the European powers' African or Asian empires matched their skills with a black powder firearm against the aircraft of a modern nation.

Field Marshal Edwin Rommel said, "Anyone who has to fight, even with the most modern weapons, against an enemy in complete command of the air, fights like a savage against modern European troops, under the same handicaps and with the same chances of success." But in the early days of airpower, the "savages" did quite well. Between 1913 and 1945 more than one piston-engined warbird had its canvas or aluminum plumage plucked by riflemen on the ground firing muzzle-loaded rifles or rifles that used chambered cartridges that still burned black powder in their brass cases. (1)

In the wake of World War I the Great Powers of Europe turned to the task of policing the overseas territories, which they held as imperial colonies or mandates given in charge by the Treaty of Versailles. Their national treasuries depleted by the recent conflict, the responsible governments sought economical means of intimidating their restive native subjects into respecting the rule which they sought to impose upon them. Punitive campaigns conducted by ground forces against rebellious indigenous peoples occupying rugged terrain amid unhealthy climates had invariably proven to be protracted, indecisive and terribly expensive in terms of both soldiers' lives and government revenues. The emergence of the airplane as a potent tactical weapon amid the carnage of World War I seemed to hold out the promise of a swift, powerful, and relatively more economical means of "bashing the wogs" into good behavior. Thus, during the immediate postwar period, aircraft played a prominent role in counterinsurgency and constabulary duties everywhere from Managua to the Hindu Kush. (2)

France emerged from the Great War with a staggering national debt and a marked shortage of military manpower after feeding the better part of a generation of young men into the abattoirs of Verdun and the Somme. Short of both francs and cannon fodder, the war-weary government seized upon airpower as a fiscally efficient and manpower-conserving means of suppressing the native rebellions which flared along the margins of its tattered empire from Syria to Morocco.

The French aviators who matched their aircrafts' speed, altitude and firepower against the Republic's rebellious colonial subjects in the 1920s were mostly veterans of the Western Front, where bursting flak from Krupps and lethal skeins of tracers from Spandau machine guns had claimed their low-flying *copains* with bleak frequency and left the survivors with a healthy respect for the dangers of ground fire. They must have found it doubly galling to learn that their new opponents in the arid defiles of the Atlas Mountains were downing French aircraft with rifles that were old before the Wright brothers had ever spun a prop amid the dunes at Kittyhawk.

Rebel Remingtons

The Arab and Berber tribes of the Algerian-Moroccan frontiers had traditionally relied upon flintlock small arms through the 18th and 19th centuries, for percussion cap arms never won favor among them due to the difficulty of obtaining reliable supplies of the thimble-shaped primers, which they were unable to manufacture domestically. Thus locally fabricated *kabyles* along with surplus Charleville and Tower muskets were the most common arms seen among them as they disputed the extension of French rule in North Africa. By the mid-1870s that had begun to change. During the Franco-Prussian War of 1870 the French had been unable to arm all of their troops with the new bolt-action Chassepot rifle, and had by necessity purchased large numbers of American Remington "rolling block" rifles as well as arms as diverse as Model 1866 Winchesters, Spencer carbines and "trapdoor" Springfields. When these non-standard foreign weapons were rendered surplus by the manufacture of adequate stocks of the Chassepot and its 1874 successor, the Gras, they were sold off to private arms dealers, who promptly found purchasers for them in North Africa. (3)

The Remingtons were the most common of the surplus rifles, and the Sultan of Morocco, Mawlay Hassan, and his successors purchased thousands of the breechloaders from European dealers. These arms eventually filtered across the Atlas ranges to the desert-dwelling tribes, many of whom were armed by

the sultan as auxiliaries to his household troops. Other Remingtons and Winchesters flowed into the region from Spanish and British gunrunners. By the 1880s the flintlock smoothbore musket had been supplanted by metallic cartridge breechloading rifles as the weapons of choice among the tribesmen. The natives even proved adept at reloading expended cartridge cases. Black powder was manufactured locally and imported as well, while primers were fashioned from a mixture of smuggled gasoline and powdered match heads. No doubt there were a few digits lost or jaws shattered when aspiring reloaders tried to seat fresh primers by tapping them with mallets or crimping them into place with their teeth, but such was the Will of Allah. (4)

The French became understandably alarmed at this influx of cast-off but undeniably effective arms among the natives and waged a determined but ultimately futile battle against the gunrunners. In 1894 a French intelligence report noted that among three tribes in the region there was a total of 4500 Remingtons, 250 Gras, and even 28 of the new Model 1886 smokeless powder Lebels in native hands. Six years later one clan of one of the smaller tribes was reported to field 800 Remingtons, 25 British Martini-Henrys, 18 Chassepots, 47 Lebels, and 75 other repeating arms of diverse patterns. Also found were elderly Spencers, Le Fauxcheux, and Kropatschek magazine-fed black powder rifles. (5)

Although during the pre-World War I period these weapons were the main concerns of homesick *poilus* and the hardbitten troopers of the Foreign Legion who garrisoned the North African colonies, the Remingtons and their blackpowder peers were still speaking in rebel hands when French aviators appeared over the jagged *massifs* and thorned *oueds* after Versailles, for the natives were reluctant to discard any serviceable weapon in their struggle against the colonial power (1886-vintage Lebels were still in use in the region as late as 1962 according to photographs of captured rebel arms). (6)

The spread of metallic cartridge arms along the Mediterranean coast of North Africa had affected the political stability of Spanish Morocco to the east as well, for in 1913 two Spanish aviators were seriously wounded by ground fire from native insurgents while patrolling over Teutan, near Tangier. In detailing the incident a British aviation journal remarked that "it has been said that aircraft form almost impossible targets either for artillery or riflemen, but it would look as though in this case the hostile Moors had either a great deal of luck with their shooting, or that an aeroplane on the wing is not so hard to hit as we had imagined." The two anonymous Spanish fliers had not only claimed the dubious distinction of being the first aviators ever to be struck by antiaircraft fire, but likely as not the rifles involved had chambered black powder loads. (7)

The skirmish at Teutan was but the first of many encounters between Spanish military aircraft and native rebels. In 1921 rebel chieftain Abdel Krim and his Beni-Ouriaghel tribesmen butchered a Spanish field army, leaving only 3000 survivors from a force of 19,000 to seek refuge across the border with the French. In November and December the rebels carved up another Spanish force in the mountains, killing 17,000 luckless *soldados*. By 1925 the Riffians had

Berber tribesmen armed with Remington "rolling block" rifles proved surprizingly effective against French biplanes in North Africa.

invaded French Morocco as well and the rebellion threatened to engulf that colony. (8)

In April of that year Abdel Krim unleashed an offensive against the French and soon overran or left isolated forty-four out of forty-six border garrisons. Many of these isolated posts could only be resupplied by air, and a senior officer even attempted to boost morale by having shipments of ice and medals flown into the forts along with tinned beef and ammunition. The rebels simply calculated the proper leads for engaging the lumbering Breguet biplanes with their Remingtons and fired away, often to good effect. One aircraft returned from such a mission with forty bullet holes in its airframe from enemy riflemen, and an American mercenary who fought with the rebels claimed that during one five-day period in 1925 he saw the tribesmen down seventeen French planes with their rifles. (9)

The French air campaign was spearheaded by eighty aircraft of the 37th *Regiment d'Aviation's* six squadrons deployed in North Africa, with an eventual twenty-two squadrons serving against the insurgents with a force of 160 aircraft by the autumn of 1925. Strafing and bombing missions occupied many of the aircrews' days, but the supply missions came to be dreaded above all others, for the typical border outpost being held under rebel siege was a small affair, and "it was very difficult to drop supplies accurately within an area often no more than ten or twenty yards across unless the aircraft flew very low, which meant many aircrew were wounded by rebel rifle fire."

The tribesmen were masters of camouflage and skillful use of the ground. "They concealed themselves from reconnaissance machines, brought down several aeroplanes with rifle fire and trapped tanks in deep pits concealed with brushwood." By the late fall of 1925 a foreign observer asserted that the Rifs had "grown to look with contempt upon modern armament." Eliphalet Remington would have been proud. (10)

As if the French did not have enough trouble on their hands in Morocco, a major rebellion flared to the east in Syria, where Druze tribesmen had first risen in 1922-23, and then again in July of 1925, holding one garrison town under siege and defeating a 3,000-man

relief column. The Breguet 14s and Poetz 25 bombers of the 39th Regiment d'Aviation flew in support of thirty-two battalions of infantry supported by tanks, horse cavalry and field artillery as the rebellion flared to its climax. From mid-July through September 1925 the Druze laid siege to the 700-man garrison of Suwayda. During their sixty-five day ordeal the defenders were solely dependent for supplies upon daily airdrops flown by four aircraft detailed exclusively for that mission. As in the Rif, groundfire proved to be a major threat. "The citadel was at most 100 by 150 yards in area and to drop supplies accurately the aircraft had to descend to between twenty and one hundred feet above the rooftops, where they made fine targets for Druze marksmen, rarely returning to base without bullet holes." The Druse riflemen became increasingly adept at hitting the canvas-winged transports. "Aircraft flying low were at risk from rifle fire and several were brought down. By mid-August 1925 the three squadrons at Rayak had lost six pilots and three machines, and all their remaining aircraft badly needed repair." Such losses were the price of suppressing a rebellion which lasted until 1927.

Monsieur Gras

Sometimes the native tribesmen benefited from the imperial rivalries of their European overlords. Such was the case in Ethiopia near the turn of the century when France became concerned about Italy's ambitions to add that piece of territory to its neighboring colony of Eritrea. When the Emperor Menelik confronted an Italian invasion force the French obligingly supplied the Ethiopians with a gift of 8,000 Gras rifles. Armed with those bolt-action pieces and a myriad array of other antique charcoal-burners along with swords and spears, 10,000 of Menelik's fierce levies mauled a force of 19,000 Italian troops at Adowa on March 1, 1896, killing 6,000 of them and capturing 11,000 more of their black powder cartridge Vetterli rifles. Both the Gras and the Vetterli were still in use nearly forty years later when the Italians came again, this time with tanks, aircraft and poison gas. (12)

The 1935-36 Italian conquest of Abyssinia (Ethiopia) pitted emperor Haile Selassie's courageous but technologically overmatched tribesmen against Marshal Badoglio's legions of Italian blackshirts and native mercenary troops, who deployed with every modern weapon of the day at their disposal. The *Regia Aeronautica's* biplane fighters and tri-motored bombers inflicted terrible casualties upon the valiant Ethiopians, who won the world's admiration for their brave, if doomed, stand against Mussolini's aggression. The natives were masters of camouflage and concealment, and the Italian fighters and scout planes had to fly low in order to spot concentrations of Ethiopian troops. Low altitude operations put them at constant risk as they ventured within range of the enemy's small arms, and the pilots grew wary of the sudden blossom of black powder smoke which erupted from the gray haze of scrub brush and thorn which covered the talused mountain slopes and ranges below them.

The Ethiopians were armed with a miscellany of weapons, ranging from Mauser semiautomatic carbines to 17th Century matchlocks. One western observer inspected a unit of 7,000 men and found that

Ethiopian Emperor Haile Selassie visits the battle front shortly after an Intalian bombing raid.

only a third of them carried modern bolt-action magazine rifles, while the rest were equipped with anything that would burn powder and throw a bullet, "of which the commonest dated from the period just before 1880." Trophy Vetterlis from Adowa were seen in the ranks along with Model 1871/84 Mausers and British Martini-Henrys, but the French Gras was by far the most ubiquitous arm in Ethiopian service at that time. Called the *Wujigra* by the natives, it "fired a lead bullet of fearful destructive power in an unpredictable parabola." Often heavily ornamented by its weapons-proud owners, the "brass-bound *Fusil Gras* was shouldered in all the streets."

The Ethiopians made eager use of any captured Mannlicher-Carcanos which fell into their hands, but they retained an abiding affection for their elderly Gallic breechloaders, for they figured in some morale-boosting triumphs over the invaders. Early in the conflict the defenders captured no less than three enemy tanks Fiat-Ansaldo tanks with nothing more potent than their black powder-burning Gras. In November 1935 the Italians mounted a drive against the stronghold of Anale in the Ogaden region of Ethiopia, spearheading the offensive with armor. Clan chieftain Fitorri Gongol's troops scored a coup when a tank rumbled to a halt just forty yards away from a hidden detachment of forty Gras-armed tribesmen. The crew dismounted to check their position with map and compass and the Gras spoke in a volley. "They all fell very slowly to the ground, like sand off riverbanks," recalled

one of the proud marksmen. Over the next hour or so two other tanks rattled to a stop at the scene, and each crew in turn dismounted to see what was delaying the preceding vehicle. Each time the Gras spoke and spilled them in the dust. The artfully camouflaged tribesmen then joined their comrades in wiping out a truckborne convoy of infantry which had been following the tanks. The three tanks were pressed into Ethiopian service amid great celebration. (14)

The Gras' greatest hours of glory were yet to come as the invaders pressed inexorably forward into some of the cruelest terrain on earth. Their aircraft always ranged ahead of their infantry, camelborne and mechanized columns, seeking to fix the defenders' positions so that artillery and air strikes could be unleashed upon them. The Ethiopians replied with automatic weapons fire from a dizzying variety of machine guns, ranging from French Hotchkiss and British Vickers to German Maxims and even Model 1895 Colts of Spanish-American War vintage. Joining the machine guns were the soldiers' rifles, as every weapon at hand was employed against the enemy aircraft. In mid-Ocotber 1935 ground fire downed two planes at Tafere Katama in southern Ogaden, boosting morale all over the country, as the Fiat biplanes fell to a curtain of fire from Mausers and the omnipresent Gras. (15)

The Ethiopians retained an abiding affection for their elderly Gras breechloaders.

On November 18 two squadrons of *Il Duce's* warbirds staged a strafing attack on a mountain encampment in a pass between Antalo and Amba Alagi in the highlands. General Ras Kassa had baited a trap for the enemy by leaving his pack animals and tentage arrayed on the valley floor while his men took concealed positions lining the upper slopes and crests overlooking the Italians' intended target. When the biplanes throttled back their engines and swooped down to make their strafing runs, "about eight thousand Abyssinians let fly at them with anything from an old Fusil Gras to a Belgian automatic rifle. Hidden all the way round the defile, they caught the Italian planes in a cross-fire," wrote war correspondent George L. Steer. "Ethiopians have told me that it was a great moment to see the planes fly straight up at the shock; then plunge about wildly . . . They shot again and again at the planes, hoping to see one fall; but the planes flew away one by one, beaten but not broken."

None of the Fiats or Capronis fell that day, but the tribesmen had punctured Italian egos as well as fuselages and drawn blood with their big-bore Gras. "They would have been happier if they had known that they had driven off the sons of Signor Mussolini," Steer noted later, adding " . . . that Count Ciano, the Duce's son-in-law, lost part of his oil-tank in the attack and only just landed at Makelle in time . . . that another pilot was forced down at Hauzien, and that a machine gunner sergeant died of his wounds." (16)

The ragged riflemen's morale soared again only two weeks later when Italian aircraft attacked a supply depot at Negelli and ground fire killed a pilot with a round through the heart. The Italians were further outraged on December 26 when Flight Lieutenant Minniti Tito was forced down during a scouting mission over an enemy stronghold and beheaded upon capture. The invaders retaliated by bombing a field hospital staffed by neutral foreign physicians. Such terrorism did nothing to quell the Ethiopians' defiant spirit, and when the enemy bombed the town of Dessye that month an observer recorded that "every Ethiopian of standing has a gun. All the guns were whipped out, and the hollow hills echoed with the violent detonation of every musket imaginable to man." (17)

The Italians' losses to ground fire were never officially documented, but fear of the blind election of a Gras' round came to rest in the back of every pilot's mind as he departed on a mission against the tribesmen. Colonel Pedro A. del Valle of the U.S. Marine Corps was serving a tour of duty as a military observer on the scene, and although they undoubtedly tried to minimize their losses or deny precise knowledge of them to their guest, del Valle noted various operations where "many planes were hit and some had to land . . . All of the planes were hit . . . (and) all Italian airplanes were hit and two made forced landings . . . " (18)

Even as the struggle went against them and inevitable defeat was in sight, the natives took comfort in lashing back at their aerial tormentors. On March 23, 1936, Emperor Selassie had shifted his command post to a network of caves lacing a mountainside overlooking a valley near Edna Mehoni, where the low ground was filled with 50,000 of his faithful troops. Correspondent Steer was with the royal party when the enemy launched a bombing attack at the cavern-based headquarters with a flight of Capronis, and "the sight of a great three-motor plane flying almost level with the cave took us by surprise . . . It circled and approached the cave and started bombing. The roar of the engines, the explosion of the bombs and the rattle of machine-guns and musketry made a deafening noise. For one moment it seemed that the machine was flying straight into the cave . . . Suddenly a shout of joy from all throats. Poking my head out of my refuge, I saw that the middle part of the fuselage was enveloped in dun-yellow smoke which left the plane in a long trail. And it . . . promptly . . . turned homeward . . . 'It's burning, it's burning' they shouted everywhere." (19) The wounded

warbird's ultimate fate went unrecorded as it strove to make it back to the Italian lines, but it was among many that had felt the leaden caress of Monsieur Gras.

An American service journal subsequently cited a report from the war zone which credited the emperor's riflemen with downing eight of Mussolini's aircraft while damaging 251 others in the uneven contest. When Haile Selassie was finally compelled to acknowledge defeat in May 1936, the heads of at least eight Italian aviators were still resting as trophies upon Ethiopian spear points. The Gras and all the other relic black powder arms in his army had proven that in determined hands they could still make the aggressor pay a high toll in a bitter coin for his conquest. (20)

The Italians should not have been surprised by the lethality of native groundfire, for they had been exposed to similarly armed enemies a decade earlier when they sought to conquer the sere expanse of Libya. In that bloody campaign nomadic Sanussi tribesmen held the invaders at bay for nearly a decade from 1922 until 1931, suffering 230,000 dead from bullets, starvation and disease, but giving the Italian airmen good reason to dread low-level missions. "The Sanussi were excellent shots and occasionally damaged or destroyed Italian airplanes; wherever possible they salvaged machine guns from the wreckage. As Italian air attacks became more indiscriminate the rebels took reprisals against captured aircrew who were sometimes cut to pieces with knives or impaled on stakes," noted a student of the Italian air campaign. (21)

"Every Dip and Fold"

The British Royal Air Force was flying punitive missions against bandits on India's Northwest Frontier even before the Great War ended in November 1918. Ever since a British army had been wiped out in the mountains of Afghanistan in the early 1840s, India's governors had sought economical means by which to overawe volatile tribesmen and make them tractable neighbors if not loyal subjects of the *Ra*j. British airmen learned early that these fierce hillmen were superb marksmen who saw matching their skill and courage against the infidels' aircraft as great sport when the De Havilands and Bristols came winging within range.

The Royal Air Force was bleakly cognizant of "the Pathan's remarkable skill in bringing down low-flying planes with rifle fire. RAF crews always carried special papers—against the possibility of forced landings—which promised safe conduct and large cash awards to any tribesmen who delivered them intact to the British lines . . .although immunity from live dismemberment could never be absolutely certain."

One account of the period admitted that "notes promising . . . a reward . . . seldom prolonged the lives of those who forced-landed; frequently they were handed over to the women of the tribe for torture." Official guidance advised the fliers that "it will be wisest to surrender with as good a grace as possible and a bold demeanour, and preferably to the older and more important-looking men in the crowd; the younger element is more liable to be hot-headed and unpleasant." Flight operations against such opponents required cool nerves and superior airmanship in negotiating the treacherous mountain passes of their homeland while exposed to rifle fire which often came from positions sited above the Englishmen's flight paths. (22)

"The tribes of the frontier virtually worshipped the rifle . . . they knew every dip and fold, every rock and cave, the angles of light and so forth. They knew distances for setting the sights on their weapons," asserted a modern chronicler of these border conflicts. Although bootleg Mausers and captured Lee Enfields were popular weapons among the Afridis, Mahsuds, Mohmands, Waziris and other tribes of the Afghan highlands, every variety of older arm also remained in use among these defiant clansmen who collectively came to be known as "the People of the Gun." Bolt-action single-shot Russian Berdans dating from the late 1860s joined British Martini-Henrys in the ranks of Afghan *lashkars* as they burned black powder loads against Private Thomas Atkins, Johnny Gurkha, and Ram Singh. The Zulu War-vintage Martinis were joined by their predecessor in the Queen's service, the .577 Snider Enfield of 1867 pattern. One British officer recalled coming under fire from the elderly Sniders as late as 1920, when their unjacketed lead bullets earned wary respect for the damage they could wreak upon flesh and fuselage alike. (23)

Every sortie flown against such opponents carried a high risk factor, and the airmen lost just often enough to keep it interesting for both sides. During a month-long punitive bombing campaign against the hostile Mahsud clansmen "accurate rifle fire from the ground brought down several machines and the air force soon found it had to fly in larger formations to disperse ground fire." On May 9, 1919, the RAF raided the Afghan stronghold of Dakka, flying through a curtain of ground fire erected by everything from flintlock Tower muskets to new war-surplus Mauser 98s. Three aircraft were so badly damaged that they made forced landings behind British lines. Four days later the riflemen downed a De Haviland in their own territory and captured the crew, who were relieved to be released to their own countrymen ten days later in an unusual display of Afghan chivalry. In March 1925, a DH 9 bomber of Number 27 Squadron fell to ground fire while bombing a native citadel in southern Waziristan, killing both pilot and gunner. In December 1929, another DH 9 spun down to a fiery end after riflemen claimed its crew over the Afghan capital of Kabul while the aviators were attempting to drop a message to the besieged British legation. At a cruising speed of about 120 miles per hour the elderly De Havilands moved slowly enough for the keen-eyed tribesmen to easily calculate the proper leads for firing on such marks. (24)

Although many of their weapons were antiquated by European standards, the Afghans scored some remarkable victories against the RAF with surprisingly few shots fired. In May 1930, a Westland Wapiti bomber from No. 11 Squadron took wing on a mission against a party of rebel hillmen west of the Khyber Pass. The plane was climbing out of a bombing run at 600 feet when a single round struck the pilot in the neck. The air gunner attempted to take over the set of dual controls in his rear cockpit and actually managed to fly the aircraft back to his base, but both men perished when he stalled it and crashed while trying to land. In

Afghan tribesmen looked upon potting at aircraft, like the Britsh Wapiti, as capital sport.

April 1937, the natives ambushed a British motorized column in the thorned maw of the Shahur Tangi, a boulder-strewn moutain pass which cut through the hogbacked ridges of Waziristan. An RAF plane arrived on station to provide air support to the beleagured troops, but on its first strafing run a bullet ripped open its fuel tank while a second slug shattered the pilot's ankle. The aircraft crashed as the wounded aviator attempted a forced landing on the narrow, bullet-swept road. The helpless gunner died with him, and the exultant tribesmen stripped the plane's machine guns from the wreckage. (25)

The tribesmen looked upon potting at aircraft as capital sport even at the risk of being strafed and bombed in retaliation. Even tribes which were nominally at peace with the British could not always resist the temptation to try their hands at bringing down one of the *feringhee* warbirds. One British pilot asked his Afghan house servant, a trusted retainer of four years employment, how he spent his vacation visit to his home village. "Shooting at aeroplanes," came the guileless reply. Some of the natives found their marks with weapons even more primitive than a flintlock jezail. Pilot Officer Arnold Wall was taking his new Westland Wapiti biplane in for a landing at one airfield when a small boy used a sling to loft a stone at the aircraft. The rock struck Wall in the eye with stunning force. He managed a safe landing, but the damage to his sight ended his flying career. (26)

Farther to the west and south the indigenous marksmen shouldered equally obsolete arms and still managed to down modern aircraft with alarming regularity. During a major Arabian uprising in 1919-20 the RAF lost eleven planes to rebel ground fire, while another fifty-seven were so badly damaged that major repairs were required to make them airworthy again. One of the worst episodes in the service's efforts to police the imperial domain from the air took place in Mesopotamia immediately after World War I ended as Iraqui tribesmen disputed the British mandate over the region. The rebels mustered a force of 131,000 men, of whom 17,000 carried modern arms, while 43,000 had "'old but serviceable rifles,' usually dating from the late nineteenth century." The elderly smoke poles proved fully capable of holing the RAF's bright roundels. (27)

From July through September 1920 the English lost eight aircraft over rebel territory, while forty-two others were so badly damaged by ground fire that they had to be rebuilt with major components, while "the maintenance of four squadrons in the field was severely hampered by the large number of aircraft damaged by bullets." The uprising continued through the 1920s despite the RAF's best efforts to quell native resistance with its bombers and armored car detachments. In the summer of 1926 Sheikh Mahmud of Kurdistan's forces shot down an aircraft and the two crewmen endured four months in captivity before they were ransomed. February 1928 saw Wahabi raiders down a plane in the desert and execute the pilot upon his capture. One pilot of No. 55 Squadron returned from a sortie over the Quara Dagh Valley in March 1931 and counted seventy-five bullet holes in his aircraft, "including one in the parachute pack on which he had been sitting."

One RAF officer concluded that the Iraqui tribesman was a good shot, since "he wasted very little ammunition on the fabric parts of the aircraft." By 1932 the British had lost fourteen pilots killed in action and eighty-four wounded in conducting Iraqui combat missions flown against black powder-based ground defenses. (28)

Mesopotamia had been a land of strife since "the Assyrian came down like a wolf on the fold," but other regions of the Middle East were also providing a brutal foreshadowing of the bloodshed that would follow World War II in the Levant. Arab revolt in Palestine erupted at Bala on September 3, 1936, when a detachment of the Lincolnshire Regiment came under attack. During the day the RAF flew fourteen sorties to cover the British attack upon the rebel-held town. One aircraft was shot down early in the action, killing both crewmen, while the commanding officer of No. 6 Squadron was wounded twice by small arms fire. Three other aircraft suffered damage from riflemen in the action. Later that month the insurgents shot down three planes in a single day. (29)

Six years later the British were flying missions against turncoat native forces allied with the Italians in Abyssinia. South African writer Wilbur Smith recounted an incident where a pilot flying a modern high-performance Hawker Hurricane monoplane fighter on a low-level mission was struck in the head and blinded by "a piece of hammered iron pot leg … fired from a 1779 Tower musket by a handful of black powder." The pilot survived, but it was an object lesson in the reality that the laws of physics still applied when even the most modern piece of aviation technology intersected with the path of a projectile lofted by the most ancient of firearms. (30)

Although the United States boasted no imperial holdings to police aside from the Philippines and Puerto Rico, enforcement of the Monroe Doctrine and the protection of such politically powerful entities as Standard Oil Corporation and the United Fruit Company dictated that the U.S. Marines would repeatedly be deployed to trouble spots in the Caribbean basin to restore order, protect American interests, and forestall any excuse for foreign intervention in the region. That was the case during the late 1920s, when an insurrection flared in Nicaragua and the leathernecks drew the mission of suppressing disorder amid the jungle-draped mountains and snow-crowned volcanoes of that turbulent country.

Nicaraguan rebels shot down a U.S. Marine Corps Curtiss biplane and immediately executed its pilots.

Marine aviators were tasked to maintain communications and a flow of supplies with numerous isolated village garrisons and highland strongpoints while maintaining standing patrols to inhibit the rebels' freedom of movement. As was so often the case, insurgents provided a market in which arms dealers could unload their most shopworn and outdated merchandise. A photograph from the period shows a Caribbean-based leatherneck inspecting a stockpile of captured rebel weaponry. In his hand he holds a battered 1873-vintage Evans lever-action carbine. Chambered for the .44-40 center-fire cartridge introduced in that year, it was one of only 7,500 such pieces manufactured before production ended in 1879. Among the twenty-odd arms visible in the photograph are at least eight Remington rolling blocks, two Model 1873 Winchesters, eight of the prolific Gras, and a well worn 1860-pattern Spencer carbine.There was not a single modern smokeless powder rifle in the bunch. (31)

Even these geriatric arms managed to draw aviator blood in at least one instance. In September 1927 the Marines launched a drive against the rebel bastion of El Chipote as four enemy columns attempted to block their advance through the jungle. Lieutenant Earl A. Thomas and Sergeant Frank E. Dowdell were strafing an insurgent unit in their Curtiss biplane when slugs ripped into its engine and the plane lurched into the trees. Thomas and Dowdell survived the crash but were immediately captured and executed. The exultant rebels sent photographs of the slain yanqui fliers' bodies to newspapers throughout Latin America. (32)

The political turmoil of Central America in the 1920s was but a ripple in the backwaters of world affairs compared to the chaos which descended upon the mineral-rich Belgian Congo when the European colonists departed in the early 1960s. Western and Soviet Bloc power rivalries combined with tribal animosities and inept intervention by the United Nations to create a cauldron of bloodshed and instability, where native rebels employed modern assault rifles alongside the primitive weapons of the African bush. In one instance the insurgents actually downed a helicopter with a bow and arrow when the iron-tipped shaft penetrated an engine cowling and severed a fuel line. European mercenaries flying aircraft on low-level missions for the secessionist Katanga province reported coming under fire from what were known as "*poupous,"* a kind ofblunderbuss, firing nails instead of bullets. They were the most modern weapons in use among the bush tribes, and could inflict fearful wounds." Photographs of the rebel forces in the region show them using a wide variety of large-caliber, military percussion muskets of European origin during the struggle. (33)

Black powder weapons were undoubtedly pressed into service in 1979 when the Soviet Union invaded Afghanistan at the start of a futile and bloodily protracted war of conquest. More than one Soviet helicopter pilot must have felt amusement turn to anxiety when the *sangars* dotting a boulder-strewn slope suddenly blossomed with black powder smoke and the heavy slugs from Sniders and Martinis ripped through the aluminum skin of his craft's fuselage or found warm billets in the bodies of crewmen. Like the RAF pilots who preceded them by half a century, they learned that in the hands of a brave and determined man a "ten-rupee *jezail*" could still draw blood against the most modern warplane when it flew within range of a powder charge kindled by flint and steel or percussion cap.

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